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A Roycrofter's Idyl

THIRTEEN miles southeast of Buffalo, N. Y., is a little country village, known as East Aurora, the home of the Roycroft Shop. The "New York Sun" declares that the thing which differentiates this village from all other country villages is the "Hubbard Squash." This, presumably, is a facetious allusion to Elbert Hubbard, the head and front of the Roycroft community, a man who has commanded much attention throughout the world, during the past few years, by reason of his keen wit and polished writings. We reproduce, herewith, a little story from his pen, which appeared in a recent issue of the "Philistine," that has all the tender human quality of a little classic. It bears a striking resemblance to the "Story of the Blind Preacher," by Wm. Wirt, so much admired by educators, thirty years ago. The story of the backwoods' teacher, by Elbert Hubbard, illustrates a principle in education that the PHOTO ERA has stood for, in its efforts to have photography adopted as an educational appliance in the public schools. It is a strong plea for a return to simplicity and nature in educational methods — the education of the head, hand and heart together.

THE ROYCROFT SHOP. By ELBERT HUBBARD, JR.

One of these days, the camera of the new dispensation in education will reach this "Deestrick School," and take its place beside the flower beds, the spelling-book and the black board inthe curriculum. Then, we hope, that Mr. Hubbard will write the sequel to this beautiful story and make it a completed whole.

"Last summer on a horse-back ride of a hundred miles or so, I came to an out-of-the-way "Deestrick School," just such a one as you see every three miles all over New York State. This particular school house would not have attracted my attention specially had I not noticed that nearly half the school lot was taken up with a garden and flower beds. No house was near and it was apparent that this garden was the work of the teacher and scholars.

"Straightway I dismounted, tied my horse and walked into the school house.

"The teacher was a man of middle age — a hunchback, and one of the rarest, gentlest spirits I ever met. Have you ever noticed what an alert, receptive and beautiful soul is often housed in a misshapen body? This man was modest and shy as a woman, and when I spoke of the flower beds, he half apologized for them, and tried to change the subject. When, after a few moments, he realized that my interest in his garden was something deeper than mere curiosity, he offered to go out with me and show me what had been done. So we walked out and out too, behind us, trooped the school of just fifteen scholars.

"'In winter he have sixty or more pupils, but you see the school is small now. I thought I would try the plan of teaching out-of-doors half the time, and to keep the girls and boys busy I just let each scholar have a flower bed. Some wanted to raise vegetables, and of course I let them plant any seed they wished. The older children, girls or boys, help the younger ones — it is lots of fun. When the weather is fine we are out here a good deal of the time, just working and talking.'

"And that is the way this man taught — letting the children do things and talk. He explained to me that he was not an "educated"

ELBERT HUBBARD IN REPOSE.

man, and as I contradicted him my eyes filled with tears. Not educated? I wonder how many of us who call ourselves educated have a disciplined mind, and can call by name the forest birds in our vicinity? Do we know the bird-notes when we hear them? Can we with pencil outline the leaves of oak, elm, maple, chest-

nut, hazel, walnut, birch or beech trees, so others familiar with these trees can recognize them?

"Do we know by name or on sight the insects that fill the summer nights with melody? Do we know whether the katydid, cricket and locust 'sing' with mouth, wings or feet? Do we know what they feed upon, how long they live, and what becomes of the tree-toad in winter? Do we know for sure how much a bushel of wheat weighs?

"I wonder what it is to be educated. Here was a man seemingly sore smitten by the hand of Fate, and yet whose heart was filled with sympathy and love. He had no quarrel either with the world or Destiny. He was childless that he might love all children, and that his heart might go out to every living thing. The trustees of the school did not take much interest in the curriculum, I found, so they let the teacher have his way; and I have since been told that the best schools are those where the trustees or directors take little or no interest in the institution under their charge.

"A collection of birds' eggs, fungi and forest leaves had been made, and I was shown outline drawings of all the leaves in the garden. The idea of drawing a picture of the object led to a closer observation, the teacher thought. And when I found on questioning some of the children, that the whole school took semi-weekly rambles through the woods, and made close studies of the wild birds, as well as insects, it came to me that this man, afar from any 'intellectual center,' was working out a pedagogic system that science could never improve upon. Whether the little man realized this or not I cannot say, but I do not think he guessed the greatness of his work and methods. It was all so simple—he did the thing he liked to do, and led the children out and they followed because they loved the man, and soon loved the things that he loved.

"Science seeks to simplify. This country school teacher, doing his own little work in his own little way, was a true scientist. And in the presence of such a man, should we not uncover?" The Philistine.

AN ILLUMINATOR. By Elbert Hubbard, Jr.

Photography in School Work

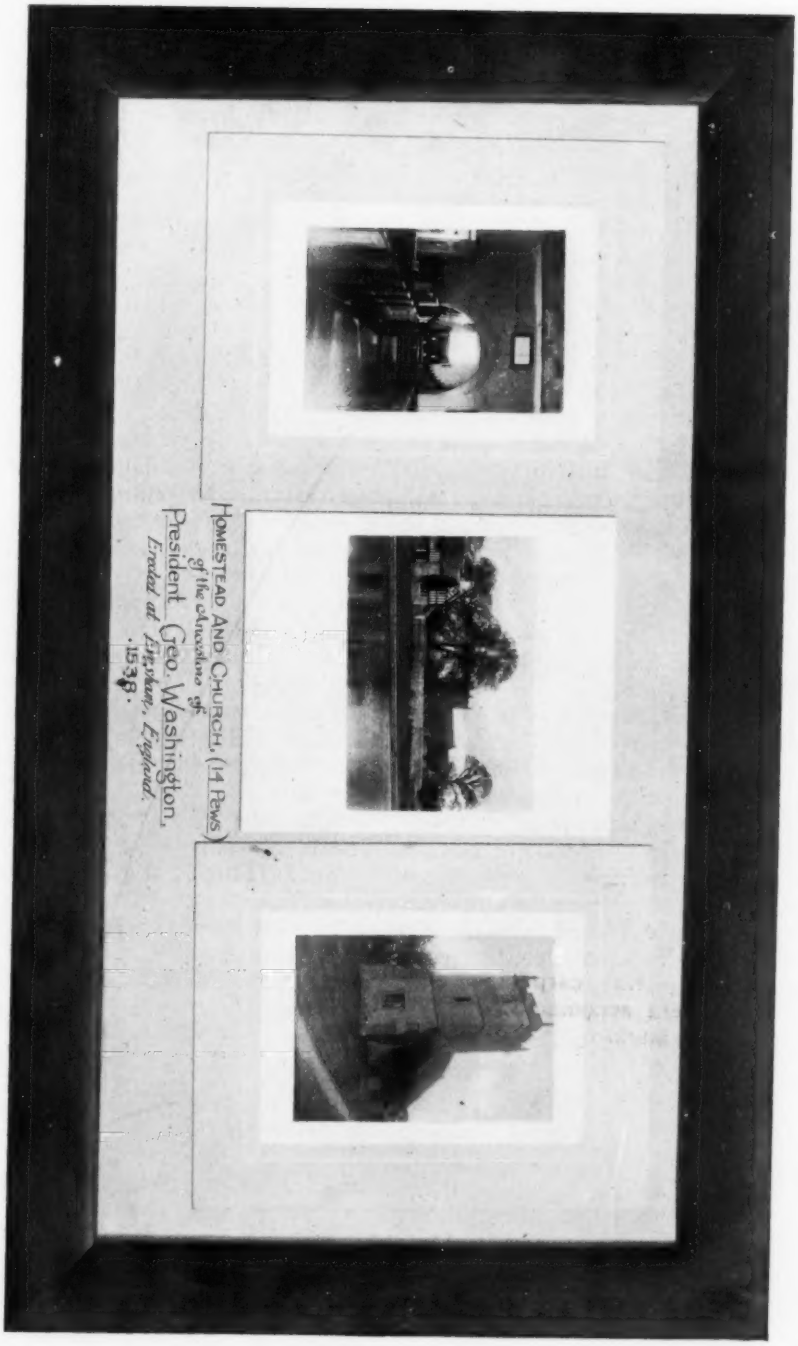
SUSAN H. WIXON

NOTHING is truer than that a great advance has been made in methods of teaching within the last decade. It is also true that nothing has so quickened the mind of childhood and youth as the use of objects in illustrating facts. Notably, the Perry pictures have been and are productive of much good in awakening and developing latent thought, and discovering to the child-mind a world of truth, beauty and attraction.

The tendency to embellish the walls of the school-room, the pages of school readers and other text-books with pictures, beautiful in design and rich in color, is, in itself, indicative of progress in the right direction.

The human mind is largely furnished with sensuous images, visual forms, and that which is learned most thoroughly and easily is imparted by means of impressions upon or through the senses. That which otherwise would seem dull, and to a slow mind incomprehensible, may be made bright, attractive, and easily comprehended by the presentation of a picture, embracing and detailing salient points. We are slowly but surely passing from the old-fashioned, cumbersome, stilted forms of teaching, and coming into a wider, broader, lovelier, and more progressive way. This broadening and brightening has been largely, it might be said, almost wholly accomplished by illustrative pictorial methods.

The life-side of nature is needed to awaken dormant thought and energy. The perceptive faculties must first be awakened and trained, and then it will be easy to develop the powers of memory, reason and reflection. When the pupil is made to fully realize that the school is fitting him to take his individual place in the great, active, working world, when the actual events of life are presented in an agreeable and pleasing manner, less will be heard about "stupid boys" and "listless girls." School work must be made attractive by means that, in themselves, are attractive — by art, form, color, by representations of daily life and its work. A school-room with a camera upon its desk is well-equipped to do a vast amount of good. Take, for instance, the study of arithmetic. Much complaint is made in regard to ways of teaching that very useful branch of knowledge. The scholar does not understand the working and solution of problems, and sometimes the teacher, distressed as well, fails to simplify the matter, and is perplexed to know just how to proceed to make her class comprehend the nature of the lesson. The mastery of the four fundamental rules in a dim way, examples in fractions, decimals, percentage, proportion, specific gravity, measurements, interest, banking, and many other "sums" are presented. But these are not invested with real life to the mind of the average child, who tries hard enough to understand the form of presentation and method of solution. He studies rules, sits up nights, pondering with clouded brow, until eyes and heart ache, and sometimes he is led to curse the man who produced the first arithmetic. His father tries to show him; but although he succeeds in getting the correct answer, the boy says, "But that's not the way — teacher requires a different method." So, helpless, he flounders along, until the very


Homestead And Church. (14 Pews
of the ancestors of
President Geo. Washington.
Erected at Brigstock, England.
1538.

word "problem" causes a convulsive shudder.

Now, one may readily perceive how a few practical illustrations, by means of a camera, might remove trouble, and lead the pupil to see things as they are. Suppose the picture of a grocery with weights and measures A farmer is purchasing goods, coffee, tea, flour, molasses, starch, oil, meal, and other articles for family consumption. The scholar is asked to ascertain the going prices of these articles, not the prices named upon the pages of the arithmetic. He multiplies, adds, gets the cost of the articles, and applies them to daily needs. The farmer purchaser may bring goods in exchange, eggs, apples, potatoes, and other necessaries; another boy is pleased in applying these simple methods of barter or exchange. This is bringing calculation home to every-day life, and he takes delight in reckoning, with the picture outlined before him, that he has produced himself, perhaps, with his own camera, instead of reading an example from the dry lines of a book. By judicious care and observation, all is made as clear as daylight, and he is happy in the work of solving an attractive example.

Similar methods may be employed in measuring walls and floors by visiting the store of a paper-hanger, a paint-shop and carpet warehouse, with camera accompaniment. The same with banking. The interior of a banking house, the receiving window, the paying window, interest, discount, notes payable and notes negotiable, mortgages, interest on deposits, all may be made interesting and useful by a series of views taken upon the spot — views of the real life-side of dollars and cents, and what they represent. The intelligent teacher might readily make all necessary explanations of the pictures taken, and a morning visit of teacher and class to the bank, the mill, and the mill office, the machine shop, the works of the iron manufacturer, the coal sheds, the electrician, surveyor's office, etc., with a camera, would be vastly profitable to school and scholar in stimulating thought and reason. Employers would not then say that graduates come to the shop and office with little or no real practical knowledge of business methods. Other branches may be plainly brought before the pupil by means of the photographic art, and thus study be made a pleasing pastime instead of an irksome, laborious, up-hill struggle because of failure to understand ways and methods.

While one may not go into strict detail in illustrating the above points, it is hoped the idea is made plainly apparent.

That photography is destined in the near future to play an important part in school work, is, to the minds of many educators, a foregone conclusion.

A TZIGAN CAMP. By M. Guitton.

A TZIGAN CAMP. By M. GUITTON.

Dr. Grün's New Fluid Lens

MUCH interest is being aroused in photographic circles, over a new lens, invented by Dr. Grün of Brighton, England, which is said to be possessed of extraordinary powers. Some of the pictures shown are instantaneous exposures, 1-25 second. Others are time exposures, which show a rapid lens of good covering power, capable of very satisfactory results. Some German authorities claim that similarly constructed lenses are far too much influenced by temperature, a difference of two degrees of temperature, rendering the lens useless. Against this crystallized statement, Dr. Grün declares that his lens had been used at temperatures between 45 and 80 degrees without showing any appreciable difference in results.

In a recent issue of an English contemporary, he describes this lens as follows:

"In the first place, my lens is not constructed on the primitive principles of Sutton's or the ordinary school-boy's lens of two watch glasses and a space filled with water; although it is possible to construct a lens in that manner, the corrections are nil. In my case there is a lens composed of achromatized glasses combined with a high refracting fluid of low dispersion, a lens of considerable thickness resulting, with all the surfaces in optical contact, and, as I hope, accurately corrected for the different rays of the spectrum. The formula:

$$F = \frac{u}{u - 1} \div \frac{r_1 + r_2}{u(r_1 + r_2 + t) + t}$$

Where $u = 1.5100$, $r_1 = +4$ *D*, $r_2 = +3$ *D*, $t = 2$ in., the refraction of r_2 being about 1.5900 with a dispersion of 0.01400, the intervening fluid having a refraction of 1. 4985 and a dispersion of .0113 — this formula will probably enable opticians to see the obvious advantage upon existing systems. In every-day language it may be said to consist in the construction of what is practically a lens of crown glass of great thickness, accurately corrected and free from aberration. As glass cannot be made beyond a certain degree of thickness without flaws and striæ, this construction enables a much thicker lens to be made, whereby a greater degree of refraction is obtained with lower curves and lessened light absorption; and although you state in another portion of your paper that the absorption of light can be neglected, I can assure you that this absorption is a factor which cannot be neglected when lenses of great rapidity are required, especially thick lenses, and a lens of my construction is appreciably faster than one of relatively the same aperture constructed of solid glass. This is a point which has been put to practical and careful test. When I first constructed my lens I wrote to the secretary of the Royal Society, offering to make the society a present of one of my lenses; but the secretary, probably thinking me a half-brained lunatic, did not answer my letter, so I was saved some £50, and secured my patent rights. Since then I have been more careful in giving information about the lens, finding it convenient to simply show results.

"When the oil-immersion microscope lens was first introduced very nearly the same objections were urged against it as have been brought against my lens, but for all that the oil-immersion lens has rendered dry lenses practically obsolete, and has also led to all the bacterio-

logical knowledge possessed at the present day.

"In regard to the definition of my photographs it must be borne in mind that many have been taken from the pit of the theatre, without any proper opportunity for focusing, and under the many difficulties that must attend the taking of photographs in the midst of a crowded theatre.

"In conclusion, I only say, whatever may be the merits or demerits of my lens—and time alone will tell us that—I have rendered it possible for a photographer to go to a theater and come home with a series of photographs of the performance without any special preparation or apparatus, and this has not hitherto been possible! Yours, etc.,

"EDW. F. GRÜN.
The Hall, Southwick, Brighton."

["Accompanying this letter was a large batch of contact prints and enlargements from Dr. Grün's original negatives, including those mentioned by our German correspondent recently. The contact prints now before us are almost technically perfect, but the enlargements are not nearly so clear and distinct. This, we venture to state, is due to faulty enlarging, as the contact prints from the same negatives are very fine. Two of these pictures are reproduced with the letter given above. The particulars supplied are as follows: "Portrait of Miss Ethel Sidney, from the 'Silver Slipper.'" This was taken in the dressing-room of the Theater Royal, Brighton, by the gaslight in ordinary daily use in the room, with an exposure of 5 secs. with a lens 3 1-2 inches in diameter, and 5 inches focal length, on a quarter-plate. The London Alhambra ballet had 1-25 of a second exposure from back of stalls — without knowledge, consent, or arrangement with the performers—with an ordinary hand camera, the operator sitting somewhat obliquely to stage. Lens, 2 1-2 inches diameter, 4 inches focal length, on a quarter-plate." — Ed. P. N., Dec. 27, 1901.]

SPRING FLOWERS. By DAY BAKER.

Hints on Exposure

APART from the three main factors governing the length of exposure, viz.: Speed of plate, size of diaphragm and intensity of light, there are two others almost equally important that are often overlooked, viz.: Predominating colors and distance of lens from plate. The various exposure meters provide us with fairly accurate guides as to the first three, but they do not and cannot be made to cover all the conditions that go to make or mar the negative. The predominating colors in the object to be photographed, which govern its luminosity or light-reflecting power, are a very important factor. There is no rule that can be laid down to guide the beginner, and long practice is the only royal road to a degree of proficiency, says "Camera and Darkroom." Some workers can judge by the amount of illumination on the ground glass, others by an inspection of the objects and studying the direct sky light compared with that in the shadows of the object. In landscape work there are more failures by under-exposure than by over-exposure, especially during the autumn, when yellow skies predominate and the foliage is of all hues. Rocks, stones, roadways and brick buildings are almost always rendered in false values, which could be overcome by adding the needed additional time to the shutter exposure.

A test will prove that almost all shutters work faster than they are marked in seconds, and for landscape work, where there are no rapidly moving objects in the fore ground, a cap exposure by the hand will generally be more satisfactory. In interior work, as a portrait near a window in the parlor, there is also much chance of failure. Negatives of such objects by beginners invariably show a white face, two very prominent white hands, and no surrounding details of body or dress unless it happens to be of a white or blue color, which is not generally worn at this season of the year. For this kind of work ample exposure is needed, especially if the subject be photographed at close quarters.

This brings to me the second important factor: The distance of the lens from the plate. Suppose, for example, a portrait be made in an ordinary sized room with a lens of eight-inch focus. The stop marked f 8 would measure one inch, but this is calculated when the lens is focused on some distant object beyond 100 feet. To get the subject the desired size on the plate it may be necessary to move the lens pointer three inches nearer to the sitter than the 110 foot mark on the scale. The f 8 aperture of the lens would then become f 11 and the exposure should be calculated accordingly.

In copying, also, where the bellows is generally racked out to its full length, it can be simplified by dividing, the focal length by the diameter of the stop employed. Comparison with an exposure scale, or with the known shutter exposure usually given will then denote the proper length of exposure. This method is better than guesswork, which many prefer.

PERCY LUND

NOW that a considerable number of daily newspapers present their readers with a column of photographic items once a week, it looks as though one might expect in a few generations to find children being presented with a camera at the same time as they receive their pencil and india rubber when they first attend a drawing class, so great indeed is the popularity of photography. But although cameras are here, and there, and everywhere, there are too few amateurs who have anything of value to show as the result of their dabblings in the black art, and this makes one sad, for there really are an infinite number of directions in which a camera can be profitably employed. I believe, for example, that very few who practice photography, make use of the camera for copying prints from books of subjects that are interesting in connection with some story or other. In fact, the mere collecting of copies of quaint prints is by no means to be despised. I have a series of portraits of authors which gives me great pleasure, and also a few illustrating particular places, showing that wild exaggeration that characterized the work of artists of a hundred years ago. I am beginning to collect quaint biblical pictures, especially those wherein our primæval ancestors are illustrated, or where the artist has ventured to depict the Creator himself. The latter I regard as particularly valuable, since they show the very crude conceptions of some of the earlier painters and illustrators, which, of course, reflected those of mankind in general. There are an infinite number of subjects in which a man may interest himself in this direction, and the camera makes such a pursuit much more practicable and economical, for it is very easy to copy prints out of old books that one may obtain on loan, while it would be most expensive to buy them. Moreover, if we want a duplicate of any particular picture for hanging on the wall, it can be easily produced — larger or smaller than the original as required — and by printing in platinum, one can obtain a capital imitation of old steel or copper plate engravings. I recommend my readers, who are making no particular application of the camera at present, to experiment in this direction.

Is not this idea worth the consideration of clubs? If several men took up the same pursuit they might exchange prints with each other; one, for example, might devote himself specially to humorous prints, another to pictures illustrating old fashions in dress, and so on. Possibly this suggestion may do something to

ward stirring up the prevailing staleness of club meetings, for there is no doubt that in England, and probably in the States also, photographic club meetings are capable of much improvement. Indeed, this question of providing interesting and useful matter in the way of lectures, etc., at clubs has so much occupied my mind of late, that even my dreams have not been free from the subject. The other morning I awoke with the consciousness of having just concluded a piece of advice to a club secretary of my acquaintaince, with these words, "Try five minute papers." This idea, which had not occurred to me previously, seems upon consideration, to be worth at least the trouble of an experiment. We all know how difficult it is to get papers or lectures from the younger or more bashful members of the club. The task of preparing a lecture that shall occupy an hour or more in delivery is no light one, if the matter is to be properly put together. But a man may have some important information to impart, for which purpose only five or ten minutes might be required. Why not, then, have a special evening in the syllabus for "five minute papers?" Half-a-dozen, say, with discussions, would be sufficient. I am also strongly in favor of alternating the lectures with social meetings, on which occasion tea and coffee are served. At any rate, I would put three or four meetings of this kind on the syllabus each season. On such occasions, the exhibition of specimens of novel apparatus, etc., would be on the cards. As to the lectures themselves, I do not see any reason why the clubs in our larger towns should not give a short course—say, half-a-dozen in all during a season—of public lectures in a large hall. Properly managed, a scheme of this kind could be made lucrative, besides being an advertisement to the society holding them. The subjects need not be within the narrow limits of technical photography, but should be extended in almost any direction where photography is applied, travel, art, science, archæology, etc.

From ideas, I now turn to actual events. Those who have done much field work in hilly districts will doubtless have had a similar experience to myself in regard to the prevalence of haze, and the impossibility of obtaining extensive landscapes with the distance at all clear, except occasionally after rain, when the best of atmospheric conditions for this purpose prevail. Now atmosphere, as a rule, is helpful to the photographer. In scenery of the ordinary type, it is an advantage rather than a drawback. But under the special circumstances detailed above, some means of securing a "long shot" without finding the distance completely obscured in the result, is greatly needed.

I am glad to find this subject has been taken up by Mr. G. T. Harris, who described his experience with orthochromatic plates and light filters at a recent meeting of the Photographic Club in London. He has found in practice that the orthochromatic plate, even if used without a color screen, gives a clearer effect where so much violet light is present than an ordinary plate. With a screen of celluloid stained with ammonium picrate, the activity in the violet region of the spectrum is still further reduced, and distant mountain outlines can be preserved even on a hazy day. Mr. Harris uses a graduated screen, placing the denser part so that it intercepts the sky portion. Of course, the use of a screen increases the time of exposure considerably, but this is no draw back for mountain scenes.

Plain Talks with Beginners

A PATH IN THE WOODS. By Geo. E. Demeritt.

PRINTING, TONING, DEVELOPMENT AND INTENSIFYING

IN printing, we multiply the copies of the negative at will by the use of various printing papers. The simplest for the beginner is a glossy paper, such as solio, albuma, etc., which give a shiny brown to purple tone when finished. These may be toned and fixed at once in a single bath. Following these are collodion papers, such as Aristo. The selftoning papers are in this class, and only require hypo for toning and fixing.

If dull finish is wanted, it may be obtained by use of Aristo platino, a double toning paper, or velox, which prints by gaslight in a few seconds, and may be developed in the same light. Platinum paper, while more expensive, is simpler, and gives the most beautiful effects.

In this section we give directions for general use on glossy papers, and the special papers will be treated in full detail later. We assume that the student has the necessary apparatus for this work; printing frames, two or three trays, some toning solution, and some sensitive paper, together with a few negatives which he has previously developed. Negatives may be thin and transparent, in which case, they should be printed in the shade, or they may be dense or contrasty, needing the brightest sun.

The sensitive paper, while not injured by dull light, should be kept dark as much as possible. A plate is placed in the frame with the glass side outward, and the paper laid in upon the film side. One side of the paper will be shiny and smooth. This is the gelatine emulsion, and should not be handled with the

fingers, as marks may be left on the surface. The back of the printing frame is then placed in position, and the springs swung into place. Some frames are divided in the centre, while others have the joint at a point two-thirds the length of the longest way. While not essential for good workmanship, this two-thirds opening frame allows the center of the plate, usually the most important part, to be examined easily.

The frame is placed in the sun. After a minute or two, we examine the paper by pulling up one end of the back, and looking at the impression. When the detail is printed quite distinctly, we take out the paper and reload. It is necessary to print a little darker than the finished print is desired to be, as toning bleaches somewhat.

The toning bath is poured out into a tray. It usually has a white sediment which is shaken up into suspension before using. Without previous washing, the prints are immersed in this, and quickly turn a dirty yellow, fading somewhat. After a few seconds, the picture gains strength and takes on a brown tone, and if the picture is printed deep enough, this goes on to purple. Most negatives do not stand this deep printing, and the prolonged toning will make a good picture into a mean specimen, very flat in appearance.

If the beginner will take somewhat more bother, he will gain in permanency, economy and tones, by using separate toning baths. The chemicals necessary are hypo, some alkali, like borax, sodium acetate, or sodium bicarbonate (saleratus), and a fifteen-grain tube of gold chloride, which costs about fifty cents. The gold chloride is moist and sticky and cannot be easily measured or weighed. If we dissolve the whole contents in 7 1-2 ounces of water, and measure half-ounces; then each half-ounce volume means 1 grain of gold. Take one grain of gold, that is, 1-2 ounce of stock solution, and dilute in about 16 ounces of water. The operator must be provided with some red litmus test papers, which are colored blue by alkalies. We add borax (or the other alkalies) to the bath until the litmus paper is a slight blue. Before testing, see that bath is stirred up, as the gold diffuses slowly, and the test may not be accurate. A light blueness means a very slight excess of alkali which is the proper condition for best toning. Excess of acid means red spots and uneven tones; excess of alkali general sunken—in flat appearance.

In this bath, the color change is rapid and apparent. The desired color should be reached in eight minutes, and the baths should be diluted or strengthened to secure such a time.

When the prints have assumed the desired tint, they are placed in a bath of salt and water, which stops the toning completely. No care is necessary for this solution, as cold water takes up a definite amount of salt at ordinary temperatures, so overconcentration is impossible. From the toning, we place the prints in hypo, 1 ounce to the pint of water. Print hypo is not so strong as plate hypo, as the hypo enters the emulsion from both front and back, whereas plates fix only from the front.

In the hypo, a slight change in tone takes place. Experience will show how far to tone to allow for this. Brown prints bleach more than purples. Fixing takes about fifteen minutes, and should be followed by washing for about two hours. In warm weather it is sometimes necessary to use a hardener, on account of the softening of the gelatine surface. Some photographic blotters are then laid out, and the

prints laid upon them, face upwards, for drying, if the photographs are wished unmounted.

If mounted photographs are wanted, the prints are trimmed before toning, as they cannot be trimmed while wet. This process is also more economical, as no gold is used in coloring the waste strip which is trimmed off. The wet prints are placed one above the other, face downwards, on a piece of glass, and covered with paste with a flat brush.

Another method is to use a squeegee plate, which is a sheet of tin with a japanned smooth surface, upon which the wet prints from the washing are laid. The excess moisture is blotted off, and on drying, the prints peel off with a high gloss. The prints should never be placed on an unclean or greasy plate, or they will be sure to stick. Do not hurry the stripping of the prints. They will drop off voluntarily with better surface than when helped

MOUNT CHOCORUA, N. H. By Chas. E. Lord.

The paste used is ordinary starch or some prepared photo paste. With a pen-knife, we lift the paste covered print from the pile, and place it upon the mounts. A photo blotter is laid over it, and pressure applied best with a squeegee roller. If the amateur uses a burnisher, the prints are passed through its hot rolls to receive a polish.

along to the point of removal.

At this point, the pupil has several exposures ready for development in the holders. First see that everything is in condition, trays washed clean, hypo solution ready, developer mixed, etc., before closing the door. Have the hypo tray always in the same place, and preferably of different material and design from

the developer one. Dissolve some hyposulphite of soda (sodium) which we will hereafter refer to by its photographic nickname, "Hypo," in four times its weight of water, remembering that ounces of water by measure are equal to ounces by weight.

Probably the student has some developer from an outfit. If a powder, it will be in two parts, which we dissolve in the prescribed amount of water, which is noted on the directions, waiting for the first portion to dissolve completely before adding the rest. The solution should be stirred constantly to prevent the chemicals from caking together, which delays the solution greatly.

If prepared liquid developer is used, pour out some in the graduate ready for use. Have everything at hand so that it can be picked up in the dark readily. A ten per cent. solution of bromide of potash should be kept available. This is made by dissolving 1 part of bromide in 9 parts of water, and is used to check overexposures.

The light is now lighted in the ruby lantern, and the door locked and bolted.

Remove the plate from the holder and place it film up in the tray for developing. The light should be as dim as possible consistent with seeing anything, as plates are very sensitive even to red light until immersion. Pour the developer across the plate with a sweeping motion, so as to avoid bubbles. If bubbles occur break them with a wad of cotton wool, or immerse the plate in pure water first before developing. In a few seconds, the brightest portions of the picture appear in black, as this image is negative, then the half tones, and the shadows last of all. Whatever was right in the subject is on the left in the plate and vice versa. This is because the lens inverts and interchanges right and like as in a mirror.

The duration of development depends greatly on the developer used. For the present, we will say, develop until the image loses brilliancy and starts to fade, and appears slightly on the back of the plate. In a later lesson, we will show the distinctions for various developers. When the development is complete, it is well to rinse the plates, as the developer in the film carried over into the hypo will discolor this bath, and make the plates liable to stain, They are then placed in the hypo and left for a few minutes. When they are next examined, the whitish deposit on the back should have disappeared, and the plate is left transparent. Great care must be taken not to touch the film or break it with the finger nail. When the white has disappeared, a moment or two longer in the fixer is necessary, as the last traces of silver are invisible. When totally cleared, the plate is placed in a tray through which running water passes, or in a washing box for several hours, as the hypo is extremely hard to eliminate. Do not let the running water strike the plates, as frilling might begin.

After washing, they are leaned up against the wall on a shelf or placed in a drying rack. An electric fan greatly quickens the drying.

One word as regards developers. One can buy numbers of preparations for developing, all put up for use, but a developer compounded by the amateur himself is sometimes more satisfactory and economical. We will describe these here, and later on give a more detailed account of them.

Prepared developers may be either in one or two solutions or in powder form. If in one solution, it is probably hydroquinone, eikonogen or metol. The two solution developers are more satisfactory, as the proportions of the parts may be varied

and errors in exposing the plates compensated for. Pyro, hydroquinone, eikonogen, are the most common in this variety. Some, like rodinal and diphenal, need strong dilution, and are instantly ready for use.

In powder form nearly all developers are put out. Some are in little tubes, with two portions separated by a little cork; others are in little envelopes containing two portions corresponding to the above. The smaller portions are the developing agent proper, the larger part contains the alkali. To prepare for use, we dissolve the larger package, and when completely dissolved add the smaller. If the solution is stirred while the alkali is added, the solution takes place quicker, as the substances do not cake together. Warm water will also hasten the solution, but the developer must be cooled to normal temperature before using.

When a plate has been underdeveloped, the detail is all visible, yet the dark parts have not enough body to stop the passage of light, so that prints have no contrast, but smoky skies and impure whites. Such a plate may be intensified, and made much denser. The intensifier usually adds somewhat more to the darkest parts than to the lighter, and so increases contrast. Hence intensification helps overexposures, which are very flat and without contrast.

Intensification is best carried on immediately after washing and before the plate is dry. It is very necessary to wash out the hypo thoroughly from the film, or yellow stains will appear and spoil the negatives. If the negative has been dried, it should be soaked in water so that the intensifying solution can easily penetrate the film.

A convenient intensifier is made up of sodium sulphite in one solution and mercury bichloride (corrosive sublimate) in another. The first step is to immerse the wet plate in the mercury solution, when the dark portions bleach out, leaving a white deposit for an image. We leave the plate in the solution until no further bleaching is apparent. The plate is then thoroughly washed, and immersed in the sulphite solution, when the white image becomes dark again. In place of sulphite, a solution of ammonia may be used. Wash well.

Agfa intensifier needs no preliminary treatment before use. It is in one solution, and is mixed one part with nine parts of water for use. Intensification proceeds rapidly and is stopped by washing.

A similar intensifier is the uranium variety, now procurable already mixed. The depcsit is reddish and much denser than it looks.

Strength and Simplicity

H. MCBEAN JOHNSTONE

IN the pursuit of landscape photography, when it is desired that the results be something more than mere photographs, that they possess a pictorial value that will render them useful for decorative purposes, and that they have in them that subtle quality that makes them worthy of study for hours at a time and then over again, an important element in the attainment of success is that the picture possess, in as large degree as possible, simplicity and strength. In fact, these two qualities are absolutely necessary to the success of the picture, for, without them, it will hardly be worth the paper on which it is printed.

Perhaps the meaning that is to be imparted will be clearer, and the idea more forcibly impressed, if an exact analysis of these two words be given: though to set forth in cold hard words how the spirit of a picture has been envolved is no mean task. In considering the subject, simplicity ought to come first, for, unless the picture have this quality, it cannot well amount to anything. To show more clearly what is meant, it will be necessary to ask that you turn from the subject of photography, and bend your thoughts toward the works that the great masters of poetry and prose have given to the world. It is not necessary to particularize — any

THE POOL OF SHADOWS. By G. S. B.

really great work will answer — only take it and consider for yourself, wherein lies the peculiar charm that has endeared it to a hundred thousand people. You are not going to find it is a work that amuses; there will be many that will do that much better; it is not that it is sad; there are many that are more sad, and it is not a dozen other things that would appeal only to a certain minority and not touch the rest. The secret lies in the fact that in every one of its least and innermost details, the truly great work comes right down to the every-day life of the people, and gives them something they themselves have realized to be truth, and something that they are thoroughly capable of understanding and appreciating. Tell me, do you think the nonsense verse of — well — say, Lewis Carroll or Gelett Burgess, for instance, would ever, could ever, have touched that inner hidden cord of sympathy and feeling that was reached when Markham's "Man with the Hoe" was published? Not that Carroll and Burgess lack merit of a kind, in their work, but they reach only a few — only the percentage of the people who are of light heart and able to laugh with them. They neither of them come right down to the soil that the people live on; talk to them of those things they know, and feel with them as they feel.

Now why not put that simplicity of purpose into a photograph; come right down to the very thing that we are looking for, photograph it as the people see it and in the exact atmosphere that they understand it. I used to think that when a "simple" picture was referred to, it was meant that the photograph must have very little in it; that, for instance, in a landscape there could not be more than two or, at the outside, three trees, and that these three must be set well apart, and on no account allowed to overlap. Why, to overlap, would have made the subject very complex! But since then the realization has come to me that my trees and bushes may be bunched in just as thick masses as they grow — if they grow that way — in the scene that is being depicted; the realization that to attempt to take them in any other manner would not only be no improvement, but would be a positive detraction. The main point to bear in mind in looking for this quality, which I am afraid I have defined but badly, is that your aim is to get on the plate, not the actualities of the scene spread before you, but the soul of it—if you are able to understand what is meant by that.

In defining the other word, strength, it is almost necessary to fall back on simplicity, for a picture that is not simple cannot be strong. On the other hand, it is possible that a photograph may be simple and not have the strength it might; for bear in mind, strength in a picture is, after all, only the excellence of the manner in which you express its simplicity. Supposing Markham had had that idea for his "Man with the Hoe" without possessing the ability to put it into words — had felt the great thought come surging through his brain without being able to give proper utterance to it (and we all feel that way at times) what would have been the result? Certainly no one else was capable of taking his idea from him and putting it into words; no one even knew that he had the wonderful poem in mind; the world would never have had it. He simply had to finish it himself, and that, too, in the strongest way ability could do it. And he did it! Now, that is what you all have to be able to do with your photographs in order to be able to make successes of them. You must take the germ of the idea, and conceive for yourselves the picture that is

going to express it to others, so that they will see it as you see it, and so that they can feel it as you feel it.

That you may better understand the point I want to make, turn to the picture, "The Pool of Shadows," accompanying this article. Make an examination of it. It seems to me that this little photograph about fills the requirements I have mentioned in the preceding paragraphs, and, as far as its strength and simplicity are concerned, it, to my mind, leaves little to be desired. You probably cannot see why I should say this about so ordinary looking a subject. I am not surprised that we do not agree. Others have told me the same thing. And what have I said? Might it not be told them that the photograph is a fine example of the pyramidal type of composition; or perhaps the answer would be that in the arrangement of its lines it approaches perfection, and if you will note the way in which they all run up to the point directly beneath the corner of the old barn, and lead one's eye involuntarily to that place where the fine quality of the atmosphere is most apparent, you will see that this answer would be very much in place; or yet again, might it not be said that its charm lies in the peculiarly happy disposition of its masses and the clever handling of lights and shadows? I think that all of these answers would be equally appropriate and would fit most excellently. Yet I would not give any of them. I prefer to adopt what has been described as the lazy man's method, and simply say, "It appeals to me." The fact is, that, though I have for some years preached composition, lighting, etc., as I understood it, and, in truth, as it is commonly taken for granted to be correct, I am just beginning to doubt if there is really anything to it after all. Remember, I do not say that there is not a certain way to best place objects in a picture to make them most effective; I fully realize that some points are more effective than others. I am not saying that a picture must be contrary to what is commonly considered correct to be good. But I do say that a picture may agree with all the laws laid down by most eminent authorities, and still lack that something necessary to make it a picture, or every one of its details may be misplaced, and still it may possess something which appeals to one. I hold that it is this quality that makes it a picture regardless of composition, though of necessity it must conform to certain fixed rules; and the more I talk with people who are supposed to know, and ask them to tell me what they understand by composition, the more pronounced does my opinion grow. Here in "The Pool of Shadows," however, we have a production which not only is pleasing, but also conforms to the rules of so-called good composition, and which moreover possesses a certain rare strength and simplicity, traceable, however, perhaps as much to the dainty way in which the subject has been handled as to its composition. You will note that in this dainty bit, there does not seem to be a line too much nor a line too little. There is just shown what is needed, and the line of true beauty, you know, is the line of perfect economy. As a natural outcome of this it is simple, and again, from this in turn, springs its strength. You might do worse than make a study of it.

RIVERSIDE. By Alvin Langdon Coburn.

"Trial by Jury"

WALTER ZIMMERMAN.

THE Photographic Salon is regarded from six points of view; those of the aspirant, the contributor, the exhibitor, the jury, the critic, and the public. The aspirant, comparatively new at photography, hopes that his pictures will be honored, some day, with a place in distinguished company; the contributor believes that the pictures which he has handed in are worthy of display, or else he would not have offered them; the exhibitor is discontented with the choice of the jury, the number of prints refused and their positions on the wall; the critic draws comparisons between exhibitions in general and looks for technical defects in pictures and frames; for if he praises, he fails in his prerogatives. The public finds a half-dozen exceptional pictures to its taste; with unexpected discrimination sees beauties which the professional has passed by; and forms its opinion upon the "show" in its entirety. The public taste is the court of last resort. The juryman, as a class, is the target for fault finding, and is regarded by some as the queen piece of the chessboard, with autocratic powers, and by others as a mere "bull in a china shop" whose

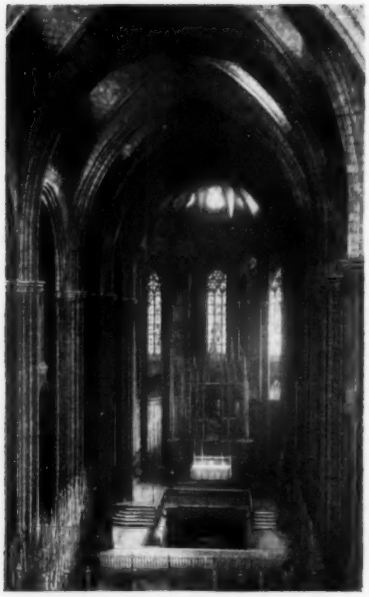
NARCISSUS. By Lillia W. Newhall.

sole province it is to destroy that which others have painstakingly built up, rendering himself as offensive as possible.

The juryman is honest in his work, and conscientious in his desire to obtain the approval of that final and mighty arbiter, public opinion. The jury, is, however, hasty; bows to the opinion of that member whose manner of criticism is the most self-assertive, instead of exercising an absolutely unbiased individual taste; fears public opinion to such a degree as to exclude much that is really artistic and characteristic; and is prejudiced by its individual fads. Nothing is more natural than that the jury, both as to courtesy to its fellow members, and in believing its own work to be the finest example of the particular fad which it regards as the perfection of art, should strongly desire to give its own work the fullest possible representation. The public is particularly interested in the work of the jury, and is, I think, disappointed, when it, in over-conscientiousness or over-modesty, fails to show its own standards of art. Sometimes the jury goes to the extreme of selfishness and gives excessive predominance to its own work, excluding that of others to such a degree as to make the salon practically an exhibition of the work of the jury and that of a few apostles to its own school or fad — in other words, an exclusive exhibition of extremists, in which other schools are not accorded any representation, even for the sake of comparison. This last sentence might seem to contradict my statement of belief in the honesty of juries. The bigoted extremist sees no merit in any work outside of his own, and in excluding the rest he expresses his narrow-minded opinion truly and honestly. For a while, popular taste, worshiping a new thing, applauded the work of the impressionists, and the public flocked to see it, partly to guess what the so-called pictures really meant, and partly to learn how far the impressionists would go in their queer efforts. With popular curiosity favoring them, the impressionists honestly considered that they alone produced art worthy of the name.

What is impressionism? In painting, it is a mere suggestion—not a representation— of the object indicated, produced by an incomprehensible laying on of the most unnatural and impossible colors. If a person of normal eyesight were to look through strongly astigmatic glasses, aided by a prism for distortion of form and color, he might perceive objects as viewed by some impressionist painters. In photography, the view through a normal lens is inartistic to the impressionist, and the true-to-nature picture must be changed by failing to focus, under-developing, printing too deeply, using spoiled paper, reversing the plate, and even by trimming the head off at the ears, like the guillotine artists of a century ago.

Extreme fads are always short-lived; and, in photography, the relief is already at hand. In the recent Philadelphia Photographic Salon, the overpowering gloom of the Third Salon was pleasantly absent, and the jury received unstinted public approval. While it exercised a nice discrimination in selecting pictures, it withheld its own work; and refused much that was beautiful, leaving vacant space which could have been occupied by the larger offerings, nearly all of which were cast aside. The recent fine display of the work of the members of the Philadelphia Photographic Society includes numerous high class "rejects" from this salon. The Fourth Philadelphia Salon was a fine exhibition, but it included some few crude or even objectionable works,



CATHERAL INTERIOR, BARCELONA, SPAIN.

such as utterly common-place "golfing" scenes or positively sacrilegious imitations.

The interest in photographic art must be intense, since the contributor faces great obstacles. Pictures, which the maker's friends and family admire to such a degree as to cause him to believe himself a great artist, are not catalogued, and money spent in framing, packing and forwarding has been wasted. The contributor who sends pictures for a coming exhibition, faces in the jury, an absolutely unknown quantity, seeming to him to be a blending of ignorance, carelessness, prejudice and favoritism. The main point is the failure of the contributor to know the individual tastes of the members of the jury of selection, and he is unable to learn this beforehand, without danger of making himself obnoxious by personal inquiries. If the intending contributor, before making his selection of prints, could but receive, for the asking, a circular describing the members of the jury, their work and their individual tastes, his chances of becoming an exhibitor would be greatly increased. His ignorance of such matters is really important, for there are many disappointed ones who can ill afford the outlay for framing, packing and forwarding, and who hope to use the exhibition of their work to their business or artistic advantage. It would be a relief to know beforehand that this man likes dark or "fuzzy" effects; this one regards cattle with favor; this woman "hates" enlargements, and "adores" miniatures; that one will vote only for something wierd and strange, and so on. The selection of intended exhibits would then, to a certain extent, at least, cease to be "guesswork."

Too great discouragement should

not be given to the enthusiastic contributor, or he will cease to send his work, which is the life, the blood, the bone, and the muscle of the show, but for which exhibitions must cease.

The salon must be taken seriously, as a great educator and instructor in that easiest, most elusive, most beautiful, most fascinating and most descriptive of arts, photography.

FIGURE STUDY. By Chris. Johnston.

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FIGURE STUDY. By CHRIS. JOHNSTON.

Foreign Abstracts

Prevention of Halation Dr. Miethe, in a careful review of the various modes of preventing halation, after canvassing the respective merits of backings, double-coated plates, and isolar plates, is decidedly of the opinion that the most effective and satisfactory method is to reverse the plate in the holder, glass side out, and to place behind it a piece of black velvet on a card. In this way, the reflected rays are all disposed of without any action on the sensitive film, and the rays which do get through are absorbed by the velvet, there being no surface capable of sending them back. Of course the result of this operation is to give a reversed negative, which must be printed by a single-transfer pigment process. The ground glass must be turned in order to make focussing exact. The exposure must be lengthened one-third to one-half to counterbalance the reflection and absorption of light by the glass, and retardation in development, caused by the fact that it begins at the back of the film and is affected by the potassium bromide set free in process. (Phot. Chronik, 1902 : 17.)

Permanganate Reducer Prof. R. Namias has worked out some improvements on the potassium permanganate reducer of which he was the inventor. The principal one is a means for preventing the yellowing of the negative, which often occurs when the negative is exposed for a long time to light. This yellowing occurs when the negative has been cleared with oxalic acid after the reduction. Its existence is thus explained; the solution of permanganate and sulphuric acid forms, in dissolving the metallic silver of the negative, silver sulphate; this is very insoluble, and remains in the film unless it is washed with exceeding thoroughness. On treatment with oxalic acid, however, it forms silver oxalate, which turns yellow on exposure to light. This yellow coloration can be avoided by using, instead of a simple oxalic acid bath, the following:

Sodium sulphate crystals	15 pts.
Water	100 pts.
Oxalic acid	3 pts.

In this bath not only the manganese dioxide, but also the silver sulphate are dissolved, and there is then no possibility of yellow stain. The process can therefore be used for the reduction of bromide prints as well as negatives. (Phot. Rundschau, 1902 : 20.)

New Use for Formalin If gelatine prints which have been squeegeed on a ferro-

type or talced glass plate refuse to come off on drying, as is often the case if the plate is not perfectly clean, it will usually be efficacious to moisten the back with a solution of formalin. When this is done, the gelatine hardens and contracts, and in doing so loses its hold on the plate. (Bull. Photo-Club Paris, 1901 : 375.)

Quick-Drying Backing M. Helain gives the following process for the preparation of a quick-drying mixture, for the prevention of halation :

Finely powdered red ochre -	10 g
Dextrin - - - - -	10 g
Water - - - - -	10 cc
Alcohol - - - - -	2 cc

Mix with a glass rod until a perfectly smooth mixture is obtained, and allow to stand some time before use. Apply to the back of the plate by a hard flat brush. Rub off with a moist sponge before development, and dry with absorbent paper or cloth, in order to completely clean the plate. (La Photographie, 1901 : No. 8.)

Accurate Definition Messrs. A. and L. Lumiere and Perricot have studied the conditions necessary for the formation of a photographic image of extreme definition, capable of very great enlargement, and announce the following conclusions :

1. One must use plates absolutely without grain, such as are used in the Lippmann method of color photography. This is by far the most important requisite.

2. A camera must be employed which will permit the plate to assume accurately the position of the focussing screen, and focussing must be done with extreme care.

3. If the objective is not accurately corrected for chromatic aberration, the chemical focus must be known and employed in place of the visual focus.

4. The largest diaphragm consistent with the correction of the lens must be employed, or diffraction will diminish the definition. (Bull. belge, 1902 : 45.)

The Fading of Prints. Forestier considers that the cause of the fading and yellowing of prints is to be found in two circumstances, the first being fixing in the light, and the second, too much washing. He considers that if the fixing is done in the light, the insoluble double thiosulphate of silver and sodium which is first formed, and which is sensitive to light, is not removed by further fixing, and gradually turns the prints yellow, besides attacking the finer details. He gives no indications of the chemical reasons for the danger of excessive washing, but recommends that complete, but not excessive, washing by non-actinic light follow fixing under the same conditions. (Bull. Photo-Club Paris, 1902 : 6-8.)

Stripping of Cracked Negatives Reeb details an ingenious scheme for the treatment of cracked or broken negative while stripping the film. The danger of completely breaking the gelatine along the cracks is well known, and it is needless to say that if this happens, the negative is ruined. In order to avoid this danger, he proceeds as follows : an old gelatine negative, which should not have been hardened, is dipped into water for an instant. Of course it begins to absorb the water and swell. Before it has had time to absorb much water, it is taken out, and the cracked plate, glass side down, is laid upon it, and firmly pressed into contact. In an instant, the plates are so firmly fastened by the swelling of the gelatine and abstraction

of water from its surface, and that it is impossible to separate them, and the stripping by any of the well known methods may be done as easily as with a perfect negative. (Bull. Photo-Club Paris, 1902 : 9-10.)

Brown Tones by Palladium According to Von Hubl, a platinum paper containing palladium gives brown tones, but only if it is kept perfectly dry at every stage of the process, as moist paper gives only black prints. The printing must be done with the help of a photometer, as the image of the iron oxalate double salt is barely visible. Platinum paper containing palladium gives beautiful, pure brown, finely modulated prints, which far surpass any mercury print. The paper is very difficult to handle on account of its sensitiveness to moisture. If this is present in the paper in large quantities, the pictures are wholly black, with a weak brownish tinge; if only traces are absorbed during printing, if, for instance, the printing frame or the negative are not thoroughly dried, and the deepest shadows are brown, but the halftones appear grey. If one prints quickly and in a good light, one obtains pictures which are brown throughout, because the paper has not time to absorb moisture. Therefore thin negatives are more likely to give good prints than dense ones.

To sensitize the paper, one uses the following mixture :

Platinum solution, 1-6	4 cc
Sodium iron solution, 1-2	6 cc
Potassium chloropalladite, 1-10	2 cc

The paper is sized with arrowroot, and coated as usual. It must be carefully protected from moisture. Printing must be done with a photometer, as if the frame is opened, the exposed parts will develop much blacker than the rest. Developing may be done in steam, or by laying between moist filter papers, or by dipping in oxalate solution; the presence of the palladium makes it much quicker than platinum paper. Palladium prints behave like platinum prints to reagents; copper chloride solution, which bleaches mercury toned prints, has no effect on them. (Das Atelier, 1602 : 29.)

Platinum Lantern Slides To the whites of four eggs add eight drops of acetic acid and fifteen ccm of pure water. Allow to stand half an hour, and drain into a- bottle Well cleaned glass is coated with a layer of two per cent. collodion, washed until all oily streaks disappear, and then coated with two layers of albumen flowing from opposite corners. Allow to set for about a minute in a horizontal position, and then dry quickly in a vertical position, finishing by artificial heat if necessary. Plates will keep indefinitely at ordinary temperature. The sensitizing solution is made as follows :

Ferric ammonium oxalate	240 g
Pure water	875 cc
Mercuric chloride	1 g
Oxalic acid	2.5 g

The plate is laid in a tray in the dark room, and flowed at one sweep with the solution. The albumen immediately coagulates and becomes insoluble. Dry away from dust. The plates will keep many weeks. Print out a distinct image; develop immediately by brushing with one per cent solution of potassium chloroplatinite; fix, as usual, in several baths of one per cent hydrochloric, and wash thoroughly. (Wiener free Photo. Ztg. 1901: 171.)

THE CRUCIBLE

WIRELESS TELEGRAPHY

The interest felt in the exploits of Signor Marconi and other experimenters on this subject, makes pertinent a little consideration of the relation of the Hertzian waves to light and other forms of vibration. It is generally known now-a-days that light is supposed to be caused by vibrations of the ether, a substance which is assumed to fill all space, as well that occupied by solid bodies as any other; solid bodies being supposed to be formed of particles called atoms, which are small in comparison to the space between them occupied by the ether. Light is produced by vibrations or swingings of the particles of this ether back and forth across the path of the ray. This vibration is transmitted from one particle to another with tremendous rapidity, the speed of propagation being about 186,000 miles a second. The times of vibration are alike for light of all colors in space, but when the rays enter a solid body, such as glass, or the lens of the eye, the period of vibration becomes different for rays of different kinds. As the speed is not changed, this change of period of vibration changes the wave length, and this change of wave length produces colors as we know them. The wave length is the distance which the ray travels during one complete vibration of its particles. It is a very small distance for ordinary light, being about the forty-thousandth of a millimeter for violet light, and half as long again for red. The visible spectrum comprises but a small fraction of the possible ether waves. Of those with which we are familiar, there are first several octaves of very short, ultra-violet waves, invisible to the eye, but capable of acting upon a photographic plate very powerfully. Then comes an octave of visible waves of ordinary light, then six octaves of invisible infra-red waves, evident to the senses as heat. Next come six octaves of waves never yet manufactured, and then several octaves of Hertzian or electric waves of different length. The Hertzian waves used in wireless telegraphy are produced by a spark oscillating between two brass balls, and are detected by a coherer, consisting of a minute quantity of metal filings contained in a narrow tube between silver plugs. When an electric wave falls on this, it becomes a conductor. The Hertzian waves move in approximately straight lines, but can bend around an obstacle. Marconi's waves are about a thousand feet long, and had to travel over a hill one hundred and ten miles high in crossing the Atlantic, a bending small in proportion to the distance travelled. The Hertzian waves are without effect on the photographic plate, in which respect they are diametrically opposite to the X-rays and the emanations from radio-active bodies, which are exciting much scientific activity at present. The exact nature of these radiations is not definitely settled. The X-rays, which were at first thought to be either longitudinal vibrations, instead of transverse, or else caused by the emission of extremely minute particles of matter which travelled rapidly through space, are now pretty generally conceded to be light waves of exceedingly rapid vibration, and the emission theory has been transferred to the new radio-active substances. We venture to predict that this theory will soon be dropped for this class of substances as it has been in all other cases where it has been proposed. Some very recent researches of Professor Rutherford seem to indicate that the emanations of these bodies are the manifestation of a dynamical change rather than a function of matter. If these emanations are produced by vibrations, they must be of enormous rapidity, even, probably, approaching the point where the attractive forces of the atom are insufficient to hold it together.

PACKING NEGATIVES FOR SHIPMENT

When negatives have to be sent away for enlarging or other reasons, it is very important that they be packed carefully, otherwise they are almost sure to arrive at the end of their journey in a state of dilapidation. They should be packed as follows, and will then travel in perfect safety. Lay down the bottom one, film up, and place a clean sheet of this paper on it. Place on it the next, film down, and then another sheet of paper between it and the next glass. Wrap the whole bunch very tightly in paper, so that there is no chance of motion, and put in a plate box. Warp in corrugated board, one piece cut the length of the box, and then another cut its width, so that the two lines of corrugation cross each other, and lessen the danger of crushing. Now wrap up firmly in brown paper and tie, or pack with excelsior in a wooden box. They will then go safely any distance either by post or express. If to be mailed, it is advisable to put the stamps and address on a tag, as then the cancellation punch will not be used on the package.

Notes and News

EDINOL Is the name of a new developing agent just placed upon the European market by the Farbenfabriken vorm, Freidr, Bayer & Co., of Elberfeld, Germany. It belongs to a new class of chemical compounds, between the phenol developers, such as hydroquinone, pyrogallol and pyrocatechine on one side, and the rapid developers such as rodinol, metol, ortol, etc., on the other. Like these rapid developers, edinol causes the latent image to appear immediately, but it can be restrained by the addition of water, bromide, or especially bicarbonate of soda. The negatives show a uniform density, great clearness, freedom from fog, and much softness which is a quality greatly to be desired in portrait work. It is extremely soluble in water. Dr. Eder says, "that it works rapidly with softness and brings out the half-tones well, and gives, therefore, with instantaneous exposures, no chalky, hard, pictures."

STOLEN We are asked to announce the theft of a Series III., No. 4 Goerz Lens, Serial Number 72301. If this lens is offered for sale, please communicate with the Reflex Camera Co., Yonkers, N.Y.

PICTURES WANTED Doubleday, Page & Co., of New York, announce that they are willing to pay a good price for good photographs of living wild animals of North America, to illustrate a forthcoming book. Prints must be submitted at once to be available. For an entirely different purpose, they will be glad to see any photographs of poultry and domestic animals that are particularly good.

READING, PA. LANTERN CLUB Begs to announce that it will hold its first annual loan exhibition of photographs at its rooms, 444 1-2 Penn Street, Reading, Pa., for the period of May 12th to 24th, and asks the kind support of the other photographic societies.

The club is a member of the American Lantern Slide Interchange, and is making every effort to popularize photography in its section of the state.

EXHIBITIONS The Harvard Camera Club will hold its annual exhibition open to the public from March 6th to 8th, in Brooks House, Cambridge. A private view and reception will take place on the evening of March 5. The club is endeavoring to arrange an intercollegiate contest similar to the one held last winter, but no arrangements have been made as yet.

The Haverhill Camera Club of Haverhill, Mass., will hold an exhibition the latter part of March. Entries with titles of pictures close March 1, and the pictures must be in Haverhill by March 8.

BAUSCH & LOMB OPTICAL CO. The recent request for prints from extra fine negatives made with Bausch & Lomb Lenses has brought a very large number of the greatest variety, and the company wishes to express its indebtedness to friends who have so kindly responded. They can still use some extra fine portraits, groups, and long distance photographs made with single systems of the Bausch & Lomb Zeiss Convertible Anastigmat and with Plastigmat Lens, as well as some extra rapid instantaneous pictures of animals and men in motion. They would also like to hear from more users of their wide angle lenses, portrait lenses for professional work, and from those making 3 1-2x8 1-2, or larger pictures, with the Bausch & Lomb Zeiss or Plastigmat Lenses; also from friends using the bichromate rayfilter and hand camera telephoto.

ILLINOIS COLLEGE OF PHOTOGRAPHY We are glad to learn that this worthy institution is progressing so favorably. It fills a long felt want in the photographic field, and the city of Effingham, Ill., in general and President Bissell in particular are to be congratulated upon the wonderful strides which the college has made during the past two years.

The Folmer & Schwing Mfg. Co. of 404 Broadway, New York City, has just completed for a western photographer a mammoth Sky-Scraper Camera taking a plate 24x36, with 60 in. focal capacity. It is fitted with light-weight curtain slide holders, double swing, reversible back, rising and falling front, and back focus.

Every adjustment of the above camera is operated by a fine rack and pinion, or worm screw. The entire woodwork of the camera is ebonized and all matal parts oxidized, and is furnished with a special carrying case made of light material, making the entire outfit very profitable.

The camera is so arranged that an extra wide lens of 6 in. equivalent focus, or any ens varying in focus up to 60 in., may be used.

The Round Robin Guild

Conducted by Elizabeth Flint Wade

(Any amateur photographer may belong.)

"Once in a golden hour I cast to earth a seed.
Up there came a flower, the people said, a weed.
To and fro th y went through my garden bower, and muttering discontent cursed me and my flower.
Then it grew so tall it wore a crown of light, but thieves from o'er the wall stole the seed by night.
Sow'd it far and wide by every town and tower, till all the people cried, 'Splendid is the flower.'
"Read my fable—he that runs may read.
Most can raise the flowers now, for all have got the seed.
And some are pretty enough and some are poor indeed; and now again the people call it but a weed."

Thus sung Alfred, Lord Tennyson, some fifty years ago, when his literary productions were first ridiculed, then basely imitated. His "In Memoriam," at first received coldly, then produced such a sensation that the magazines were deluged with "in memoriam" poems. Most thought they could raise the flowers because they had the seed.

Imitation may once have been sincerest flattery, but today, imitation is the desire to produce something which shall equal or rival some popular production. Take the historical novel. One author creates a masterpiece, all the others hasten to obtain the seed by delving into old colonial records and endeavor to produce the same flowers,

"And some are pretty enough and some are poor indeed."

One might run the whole gamut of imitative work, but we will omit the others and sound the art photographic note. Here, indeed, is the most apparent imitation of all. A few years ago an artist succeeded in producing with his camera a real masterpiece of photographic art. It was so unlike what was the accepted style of photographic work, that at first it was called a weed, and then, after a time, people began to say, "What a splendid flower!" Straightway every amateur seized his camera, fired with the ambition to produce something equally as fine. The result is quite apparent, and while there are notable exceptions, most are poor indeed.

The merit of a poem, or a painting, or a photograph lies entirely in the individual behind the pen, the brush, or the camera, as the case may be. Let us, members of the Round Robin Guild, avoid imitation, and each seek to put his or her own individuality into each picture, and ceasing to to follow what seems to be the motto of the many, "how much," endeavor to see how well we can make each picture whose image we compose on our focussing glass.

The Advantage of Specializing.

Oliver Wendell Holmes styled the amateur photographers of earlier years "wandering Thugs of art," a term which might with justice be applied to some of our latter day workers. These tramp photographers roam about from place to place with no special object in view, and take anything and everything that comes in the angle of their lenses — provided the plates hold out. Now to be a real success one must choose some special phase of the work, and endeavor to do his best along that line. Whether the amateur makes choice of landscapes, waterscapes, figure studies, animal studies, flower studies, or any other subject that interests him, he should devote time, talent and dry-plates to striving to attain success in the department chosen. The devoting one's self to the making of one kind of picture, need not necessarily debar one from making pictures of other subjects, but the specialty should always be kept in view.

No class of picture is so universal a subject for the amateur as landscapes, yet how very few really artistic photographs of landscapes are the result of all these exposures. But if one studies landscapes at all seasons of the year, in all sorts of weather, and under all conditions of lighting, he will find that even the one scene has as many different aspects as there are moments in the day. This studying of one style of picture, the lights and shadows, the lines, the point of view, etc., results in giving to his work an individuality which no amateur can attain who simply goes about "pressing the button."

Peripatetic Photographers.

In days of yore the advent of the "daguerreotype car" was as much expected in country towns as the visit of the circus with its wonderful performers and its astonishing menagerie, indeed it was really more of an event, for it remained longer, and when it departed left behind lasting mementoes of its visit. The proprietor of the car was the lion of the hour, his unique calling investing him, in the minds of the uninitiated, with occult powers. The interior of the car was redolent of strange odors, odors which are still by his patrons associated forever with the process of picture making by means of a camera. There was a delightful air of mystery about the whole proceeding from the placing of the crutch behind one's head, the eclipse of the

operator under the black cloth that covered his instrument, his disappearance into a tiny dark closet, and his reappearance with a picture in his hand in which the sitter found himself perpetuated with a silly smirk, or with a frown to make the stoutest quail, and, in either case, a dab of red on cheek and lip to simulate the bloom of youth, and a splatch of gilt to represent one's jewels.

Those were the days of the stage coach when a journey was a momentous undertaking not to be entered into lightly; but today the railroad, like a great octopus, reaches out its many arms, and holds the majority of country places in its grasp, and its steam carriages make it so convenient for those who wish a counterfeit presentment of themselves to visit a town "studio," that the occupation of the travelling picture-maker is practically gone.

The present endeavor to revive old customs and trades may lead to the renaissance of the travelling photographer. To my mind, there would be no more delightful way of spending a summer than to fit up an establishment on the plan of the old daguerrean car, and journey from place to place, choosing, of course, those towns not on the direct line of the railroad. There would certainly be no lack of patrons, especially if there were plenty of grandmothers and children in the locality. One might in this way combine business and pleasure, and have both in equal quantities. Such an undertaking would necessitate something of an outlay at the beginning, but the after expenses would be merely nominal.

One hundred dollars is the price given by a practical carpenter for the construction and interior fittings of a car fourteen feet in length and about eight feet wide. This includes the frame on which it rests and the wheels which make it easy of removal when one wishes to change his location. Two amateurs might combine and share alike the expenses and gains of such an outing. In these days of "jackknife" furniture the interior could be transformed into a cozy living room when not in use as a studio. With chemicals in powder form, a portable camera, and only the very necessary dark room accessories, the working paraphenalia would be in compact shape.

The only difficulty would be in getting the car transported to its first resting place, but the railroad would solve that difficulty at a small expense. The car itself would be moved from place to place by the assistance of a pair of stout horses, or more slow-going oxen. From one village to another would not be a distance of more than three or four miles, and each location would prove more or less lucrative.

Besides the individuals who would wish to be embalmed in gelatine, the artistic amateur would find plenty of artistic subjects along the way. Two young women amateurs with a chaperon might undertake such a photographic outing, and a party of five or six congenial spirits might even thus spend a delightful summer. Those not interested in photography could pursue their individual hobby, which in these days of strenuous and vigorous life, more often than not, takes one into the beautiful out of-doors.

A summer parlor may be improvised by a piece of awning cloth, one side of which is attached to the "car" and the other side supported by a pole at either corner. Under this may be swung a hammock, while improvised rustic seats make up the rest of the furnishings. A gypsy kettle and chafing dish will be all the household cooking utensils needed, and one could carry a stock of paper plates, and do away with the necessity of earthen dishes. Nothing could be more ideal in the way of a summer vacation than just such an outing as here suggested.

A Floating Photo Studio.

Apropos of the travelling studio moved from place to place on wheels, comes to mind the clever scheme of four amateurs who rented one of the cable boats formerly used on the canal in the unsuccessful scheme of "cable towing." This boat they fitted up as a houseboat with photo studio attachment, and journeyed up and down the canal, stopping wherever they saw pictorial possibilities. Boatmen were always ready to "catch their line" and tow them to a location. Their fame travelled in advance, and the "floating studio" had a most hearty welcome, and what is better, a good patronage at the various villages where they stopped along the route. The rent of the boat was ten dollars for four months, the fittings were discarded furniture exhumed from the garret, and the beds were hammocks swung at night and taken down during the day. Plenty of mosquito netting protected them from mosquitos and other annoying insects, and food was obtained at farmhouses or village stores. The part of the canal through which they made their trip, lay through a most picturesque portion of the country, and their journey was more like a voyage on an inland river than down a prosaic canal.

Either of the outings suggested, by land or by water, would prove a most novel and enjoyable way of using one's vacation, and combining business with pleasure the outlay would be far less than the income.

ANSWER TO CORRESPONDENTS.

B. C. R.—The name "kallitype" is often confounded with "calotype," the name which Talbot gave his paper negative process patented some sixty years ago. Both names are derived from the same Greek words, "meaning beautiful picture." The paper is coated with two iron salts, ferric oxalate and ferric nitrate, with silver oxalate and silver nitrate. The action of light on the ferric oxalate is to reduce it to ferrous oxalate. The paper is developed as follows: Prepare a developing solution made of 1 oz. Rochelle salts, 3-4 oz. borax, and 10 oz. of water. Make up a solution of 20 grains of bichromate of potash and 1 oz. of water; and another solution of 4 drms. of ammonia (liquid) to 1 pt. of water. Add to the developing solution ten drops of the bichromate of potash solution. Place the prints face downward in the developer, slipping them in carefully that no air bubbles form on the face of the print. When the paper is thoroughly wet it is turned face up and the development allowed to go on for from fifteen to twenty minutes. The tray should be rocked occasionally. As soon as the print is developed it is placed without any washing in the ammonia bath. This fixes the print. Two ammonia baths of ten minutes' duration are sufficient for fixing.

Ward R. Hyde.—Metol and hydrochinon combined make a far better developer than either agent used by itself. A formula will be given you if you so desire. The stains can be removed by soaking the plate in a solution made of 1 1-2 oz. sulphate of iron; sulphuric acid 1-2 oz.; alum 1-2 oz.; water 10 oz. Soak until the stains disappear, wash thoroughly and dry. Sulphuric acid is poisonous and the plate should be handled with a plate lifter to avoid putting the hands into the solution.

W. D. F.—It depends altogether on what kind of work you wish to do whether it would be wiser to invest in the larger camera. The cost of plates for the 5x8 camera is, of course, double that of a 4x5. Your camera which you now have is a most excellent make, and larger negatives can be made from your smaller ones, or you may make bromide enlargements, directions for which were published in the February number of the PHOTO ERA. Carbon printing is very interesting, and one may vary the color of his prints indefinitely. Please write enclosing stamp for reply and give your formula, and the editor will be glad to answer your other query by mail.

B. E.—By the rapidity of lens is meant the length of time it requires to produce an image on the sensitive plate. The size of the diaphragm affects the rapidity of a lens. The smaller the diaphragm the longer must be the exposure.

G. M. A.—Flashlight sheets are to be preferred to either the powder or cartridge. They burn with a steadier light, and the pictures made with them have softer highlights and more detail in the shadows. One advantage of the flash sheets is there is less danger from fire or from premature explosion.

EXCHANGES.

Jacob G. Sanderson, 144 Douglass Ave., Freeport, Ill., would like to exchange prints with members of the Guild.

W. D. Fuller, a member of the Guild, sends the following item of information for the members of the Guild: "I have noticed that if a piece of W. D. Plat.num paper (Eastman) be given a short exposure just so that detail begins to show and is then placed in the dark for two or three hours it will then be completely printed and ready for development. In this way I can start several prints at my noon hour, lay them away in the dark and they will be ready for development in the evening. This method of printing I have found very good for thin negatives."

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MARCH.

"The winter of our sorrow passes by
The springtime of our hope is drawing near."

During wild and blustering March, though the sun has a warmer glow, the days are perceptibly longer, yet the spell of the frost is still in the air, and spring will not come for some weeks yet. So, when we hear the biting blasts and feel the sharp snowflakes that sting our cheeks, we know that the gruff old chap, Winter, is with us yet, and is likely to give us some hard knocks before he says farewell.

Time was, however, when Lent was supposed to mark the coming of spring. This year the season of fasting and prayer happens along when the aggravation of sharp winds and chilly air is at its worst. When the forty days of Lent are over, and March is nearing its end, then perhaps we shall catch through the woodland a glimpse of Spring's white shoulders and hear a strain of her tinkling laughter.

Meanwhile it should not be forgotten that the camera is an excellent Marconi receiver for these wireless messages, harbingers of early spring, direct from the hands of nature herself.

Wireless Telegraphy Elsewhere in this issue, on the Crucible page, we have referred at length to this wonderful discovery of Signor Marconi which has so recently filled the scientific world with astonishment. It is true that the Hertzian waves of ether used in wireless telegraphy do not affect the photographic plate, but they serve to fix attention upon the phenomena of light and color. One of these days, will come a genius, who will do for photography all that Marconi has done for telegraphy, and perhaps unlock the secret of photography in colors that has so puzzled the world and is still veiled in mystery.

Color Photography A. H. Verrill, a son of Prof. Addison E. Verrill of Yale University, announces a recent discovery in color photography that, in his opinion, surpasses previous results in this direction. His method is to photograph direct from nature, develop, print and fix in the usual way. No further details are given, beyond the fact that his results show the minutest colorings of nature.

Hoch der Prinz Apropos of Prince Henry's visit he will soon dispute with his brother, the Emperor of Germany, the unique distinction of being the most photographed man alive. No less than 700 authentic pictures are said to have thus far been made of the great war lord of Europe. Judging by the amount of public and official interest whieh Prince Henry has thus far created in America, the name and number of his photographs will soon be legion.

Mr. Yellott's Address The address of Mr. Osborne I. Yellott' before the New York Camera Club on January 28th, was a masterly presentation of his subject, "A plea for Rationlism in Photography." Though it fell upon stony ground, it stirred up quite a hornet's nest in falling, and the discussion that followed was full of acrimony and bitterness. The outline of the address was as follows:

Mr. Yellott showed that the controversy was first begun by Mr. Keiley claiming for his disciples and "Camera Notes" the redemption of the American photographic world. Then, when PHOTO ERA, and others, disputed this absurd claim, he came back at us in the "Annuals and Camera Notes," alleging that we were savages. Having slapped us in the face, we then felt at liberty to criticise the work of some of the new school. That even then we said nothing about their salon policy, and continued to say nothing about it until after the first Chicago and their third salon. That the number of exhibitors at these three exhibitions had decreased gradually from 100 to 88 to 40, and that the proportion of the judges' picture had as steadily increased from one-thirteenth to one-eighth to one-fourth. That we then objected to their jury system, and suggested juries of painters. Mr. Yellott quoted from their own authors to show that the PHOTO ERA's objections to the system were valid. On the question of comparative aims and ideals, he showed that, long before the beginning of the controversy the PHOTO ERA, and other photographic journals, had been publishing valuable articles helpful to the cause of artistic photography, and that our aim was the development of photography along all possible lines before we could declare that we had in any degree accomplished our end. He urged a reconciliation, and offered to accept them as leaders, but not as masters. To put it mildly, they declined without thanks.

A Correction We regret the necessity of announcing that we were deceived as to the authorship of the picture entitled "Sand Dunes," published on page 165, of our last volume. The picture is a reproduction of a platinotype, by A. Horsley Hinton, and we can only plead in justification of our mistake, that even a photographic editor is unable to keep in mind all the pictures produced now-a-days, even those of such masters of the art as Mr. Hinton. We have been unable to get a satisfactory explanation from the source whence we received the picture, and have to confess that our faith in human nature is a little less than it was formerly.

Bibliography of Photography Miss Chase's bibliography, of which the first installment was published in last month's PHOTO ERA, and which will run for about a year, is intended to fill at least partially a long-felt want in the literature of photography. While it does not profess to be a complete catalogue of all photographic literature, it aims to be fairly complete in two lines, the books published in English, and the periodical articles in the same language, outside of those in the purely technical journals, whether of photography or chemistry. This division has been made advisedly, for two reasons; first, the reader who has access to files of photographic periodicals, will naturally turn to them first; but he who does not own them will find that the libraries have very few files, while the periodicals which we have indexed are found in all large libraries and many small ones; secondly, an index of articles in the photographic magazines would fill many volumes. The

list of books, while not complete, contains all the books to be found in any of the libraries of which published catalogues exist, including the rich collections of the Royal and Philadelphia photographic societies, besides many others whose titles have been gathered from many sources. It is by far the most complete catalogue of English photographic books ever compiled. If any reader can inform us of books which we have not included, we shall be glad to publish a supplementary list at the conclusion of the work.

The classification is necessarily tentative and incomplete; we have not included all possible subject headings, because we find no literature on some. Another arrangement may be preferred by some readers in some cases; we have carefully considered the classifications adopted by various institutions and authors, and have adopted in the main that of the British Patent Office, with some changes which seemed advisable to us. We should undoubtedly have used the classification of the "International de Bibliographie," if it had appeared when ours was adopted. Whatever may be the faults of our work, and they cannot be more obvious to others than they are to us, we hope that it will prove useful to those who are looking for the kind of information which it professes to afford, and we will gladly allow those who are dissatisfied with it to use it as a foundation for a better and more complete list.

In conclusion, we wish to express our thanks to the Library School of the University of Illinois for permission to publish the part which was accepted as a thesis in June, 1901.

Photography and Education

Miss Susan H. Wixon, from whose pen we publish this month the latest contribution to this subject, is a well-known author and educational authority. Not only has she been a successful teacher, but for the last fifteen years she has been a member of the school committee of Fall River, Mass. Angered by her fearless attacks on corruption and inefficiency in the management of school affairs, her enemies last fall secured her defeat for renomination by the Republican party, which she had served for five terms. Running as an independent candidate in an otherwise uncontested election, she polled 11,000 votes, a majority of 4,000 over her nearest competitor, and the largest vote ever received by any candidate for any office in Fall River.

The movement to which Miss Wixon lends her aid is marching on with a steady step. Both in America and abroad our articles on this subject have aroused wide-spread comment and approval, and there is no doubt that a great and mighty good to the nation will come from this idea, when it is adopted and carried out to its legitimate end.

Our methods of education are intolerably deficient for this enlightened age. The one thing which it is important to teach children is observation. Reasoning will come later; we cannot make philosophers of ten-year-old brains, and that is the false and cruel attempt to which our system of education is now committed. Observation, question and answer, information given when the thirst for it is aroused, are the foundations on which we must build the education of the future.

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